Volunteer Lake Assessment Program Individual Lake Reports

ARMINGTON LAKE, PIERMONT, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,368	**Max. Depth (m):**	10.3	**Flushing Rate (yr^{-1}):**	1.5
Surface Area (Ac.):	142	**Mean Depth (m):**	3.9	**P Retention Coef:**	0.63
Shore Length (m):	4,500	**Volume (m^3):**	2,340,500	**Elevation (ft):**	1334

TROPHIC CLASSIFICATION

Year	Trophic class
2005	OLIGOTROPHIC
2007	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

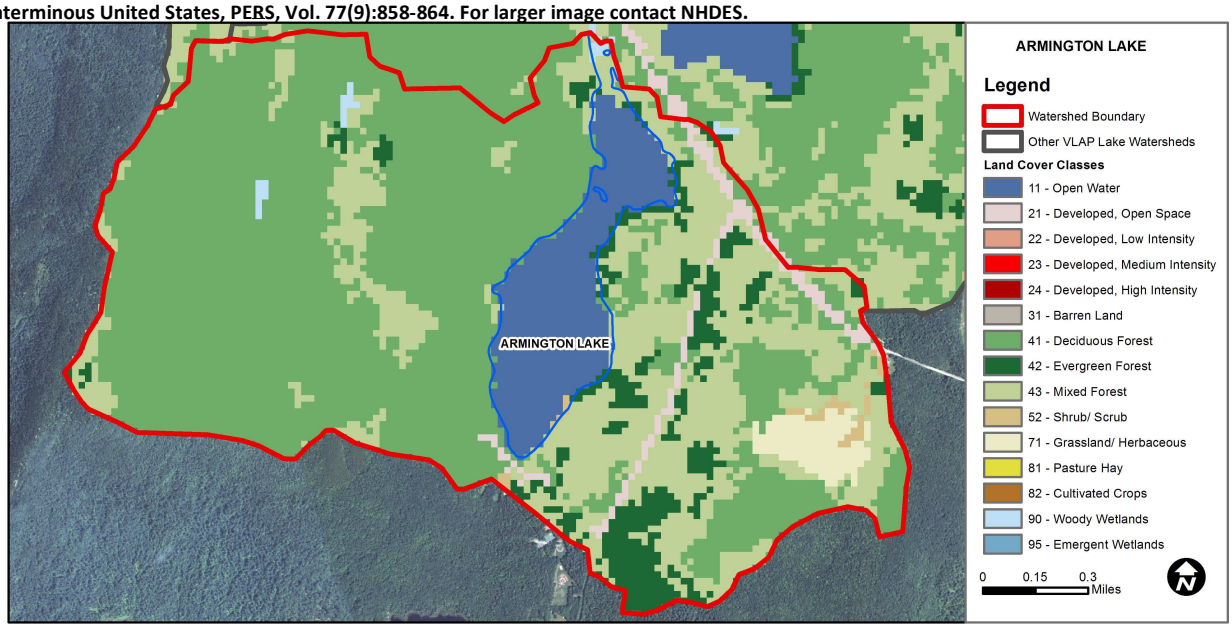
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	D.O. (mg/L)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	D.O. (% sat)	Encouraging	< 10 samples and no exceedance of criteria. More data needed.
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

LAKE ARMINGTON - CAMP WALT WHITMAN BEACH	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	8.87	Barren Land	0	Grassland/Herbaceous	1.86
Developed-Open Space	1.96	Deciduous Forest	55.85	Pasture Hay	0
Developed-Low Intensity	0	Evergreen Forest	6.58	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	23.81	Woody Wetlands	0.36
Developed-High Intensity	0	Shrub-Scrub	0.57	Emergent Wetlands	0

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
ARMINGTON LAKE, PIERMONT, NH
2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic)*

- **CHLOROPHYLL-A:** The 2012 average chlorophyll-a concentration was the lowest measured since monitoring began. Historical trend analysis indicates significantly improving chlorophyll-a trend.
- **CONDUCTIVITY/CHLORIDE:** Conductivity low and well below NH median values.
- **E. COLI:** E. coli levels were very low and well below NH state standards for public beaches and surface waters.
- **TOTAL PHOSPHORUS:** Deep spot phosphorus levels were very low and well below NH median values. Historical trend analysis indicates significantly improving epilimnetic (upper water layer) phosphorus trend.
- **TRANSPARENCY:** Although well above the NH median value, historical trend analysis indicates significantly decreasing (worsening) transparency.
- **TURBIDITY:** Very low and stable turbidity at the deep spot.
- **PH:** 2012 Average pH levels were sufficient to support aquatic life, however historical data have been below desirable levels.
- **RECOMMENDED ACTIONS:** Historical trend analysis indicates a worsening lake transparency that cannot be explained by increasing chlorophyll-a (algal growth). Identify sites with potential sediment erosion and use Best Management Practices or the "NH Homeowners Guide to Stormwater Management" to reduce stormwater and sediment flow into the lake.

Dissolved Oxygen & Temperature Profile

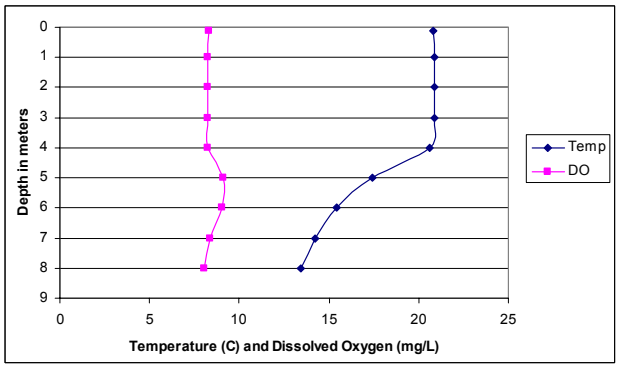


Table 1. 2012 Average Water Quality Data for ARMINGTON LAKE

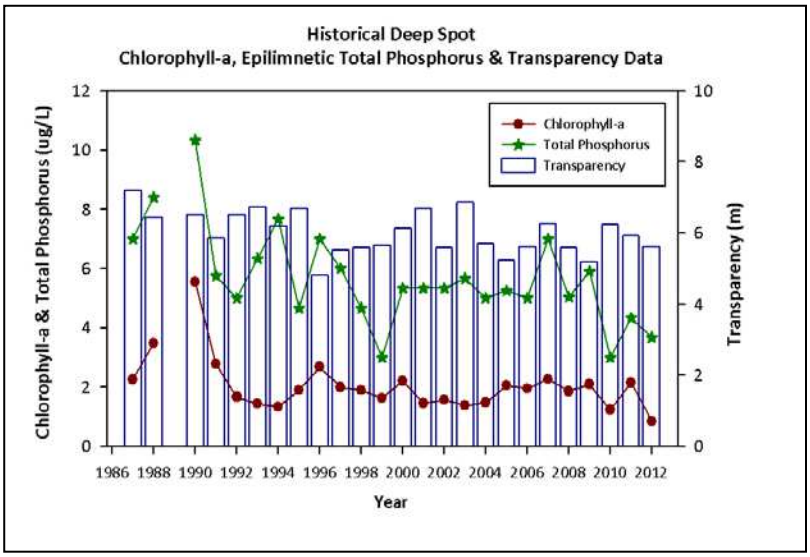
Station Name	Alk.	Chlor-a	Cond.	E. Coli	Total P	Trans.		Turb.	pH
	mg/l	ug/l	uS/cm	#/100ml	ug/l	m		ntu	
						NVS	VS		
3				1					
5				1					
Epilimnion	3.87	0.85	29.0		3.67	5.62	7.33	0.39	6.92
Hypolimnion			26.1		4.33			0.53	6.6
Site 2c				1					
Site 6a				1					
Site 6f				1					

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Improving	Data significantly decreasing.
Transparency	Degrading	Data significantly increasing (worsening).
Phosphorus (Epilimnion)	Improving	Data significantly decreasing.



This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:
Sara Steiner
PO Box 95
Concord, NH 03302-0095
(603) 271-2658
sara.steiner@des.nh.gov